Notice of Allowability	Application No.	Applicant(s)	
	09/386,270	LOVELAND, JAMES B.	
	Examiner	Art Unit	
	Ayal I Sharon	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *amendment filed 5/10/2004*.

2. ☒ The allowed claim(s) is/are *1-20 and 23*.

3. ☐ The drawings filed on _____ are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date Attachment #7.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

KEVIN L. TESKA
SUPERVISORY
PATENT EXAMINER

EXAMINER'S COMMENT

Drawings

1. This application, filed under former 37 CFR 1.60, lacks formal drawings. The informal drawings filed in this application are acceptable for examination purposes. When the application is allowed, applicant will be required to submit new formal drawings. In unusual circumstances, the formal drawings from the abandoned parent application may be transferred by the grant of a petition under 37 CFR 1.182.

EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

2. Applicant's amendment to claim 15 has overcome the 35 U.S.C. §101 rejections of claims 15-20 that were presented in the previous Office Action. These rejections have been withdrawn.
3. Examiner also notes that Applicant has cancelled claims 21 and 22.
4. The following is an Examiner's statement of reasons for the indication of allowable subject matter. The closest prior art of record is:
    a. Hsu et al., "A Constraint-Based Manipulator Toolset for Editing 3D Objects" Proceedings of the 4th ACM Symposium on Solid Modeling and Applications, May 1997, pp. 168-180. (Henceforth referred to as "**Hsu**")
    b. Maxley et al., New Riders' Reference Guide to AutoCAD Release 13, 1995, pp. 21-39, 63-66, 267, 284-285, 293-295, 304-305, 307-310, 377-

380, 402-404, 490-492, 560-562, and 642-644. (Henceforth referred to as "**Maxley**")

c. Gromat. U.S. Patent No. 5,950,374. Issued Sept. 14, 1999. (Henceforth referred to as "**Gromat**").

d. Krause et al. U.S. Patent No. 5,625,827. Issued Apr. 29, 1997. (Henceforth referred to as "**Krause**").

5. Applicants' first set of claims consists of claims 1-5 and 23. Independent claim 1 is directed to a method for computerized modeling of at least one chamber of a building structure with a concurrent estimation of one or more design parameters associated with said chamber of said building structure.

6. Applicants' second set of claims consists of claims 6-9. Independent claim 6 is directed to a method for graphically modeling dimensions of a room of building structure while concurrently providing a real time estimate of attributes of said room.

7. Applicants' third set of claims consists of claims 10-14. Independent claim 10 is directed to a graphical method for graphically representing a room within a structure and concurrently estimating material requirements for the room, wherein said room is comprised of a plurality of planes.

8. Applicants' fourth set of claims consists of claims 15-20. Independent claim 15 is directed to a computer program product for implementing within a computer system a method for graphically modeling dimensions of a room of a building

structure while concurrently providing a real time estimate of attributes of said room.

9. The following discussion pertains to these limitations recited by Independent Claims 1, 6, 10, and 15:

> (d) morphing a said selected facet of said one or more of said plurality of facets to obtain a morphed facet, such that said estimation polyhedron more closely approximates said chamber undergoing estimation; (Claim 1)
>
> (d) morphing said selected facet of said one or more of said plurality of facets of said estimation polyhedron to obtain a morphed facet and to more closely approximate said room undergoing estimation; (Claim 6)
>
> (d) morphing said selected plane into a morphed polygon to approximate a plane of said room undergoing estimation; (Claim 10)
>
> (d) morphing said selected plane into a morphed polygon, such that said morphed polyhedron more closely approximates a plane of said room undergoing estimation; (Claim 15)

10. The following discussion also pertains to these limitations recited by Independent Claims 1, 6, 10, and 15:

> (e) automatically revising in real time said material and labor **calculation** attribute of said morphed **facet** and any adjacent **facets** of said estimation polyhedron also modified and affected by said **step of morphing**, in order to maintain a closed volume of said estimation polyhedron; (Claim 1)
>
> (e) automatically revising in real time said material and labor attribute of said morphed **facet** and any adjacent **facets** of said estimation polyhedron also modified and affected by said **step of morphing**, in order to maintain a closed volume of said estimation polyhedron; (Claim 6)
>
> (e) automatically revising in real time said material and labor **calculation** attribute of said morphed **polygon** and adjacent **ones of said plurality of planes** affected by said **morphing step**, in order to maintain a closed volume of said estimation polyhedron; (Claim 10)
>
> (e) automatically revising in real time said material and labor attribute of said morphed **polygon** and any adjacent **planes** of said estimation

polyhedron also modified and affected by said **morphing step**, in order to maintain a closed volume of said estimation polyhedron; (Claim 15)

11. Hsu teaches the use of a CAD program for morphing polyhedrons, as well as the use of attributes for morphing the polyhedrons (See Section 4 "Geometric Constraints", and Fig.5).

However, Hsu does not teach the use of attributes associated with the polyhedron. Hsu therefore also does not specifically teach either material nor labor attributes, nor does Hsu teach the automatic revision of such attributes as a result of the morphing.

Hsu also does not teach revising the material and labor attribute of a given morphed facet and any adjacent facets of said estimation polyhedron also modified and affected by said step of morphing, in order to maintain a closed volume of said estimation polyhedron.

12. Maxley teaches the use of a CAD program (AutoCAD) for modeling geometric objects such as polyhedrons. Moreover, Maxley teaches the use of attributes such as surface area, mass, and volume associated with the polyhedrons. (See especially: pp.63-66 "Area" command and pp.402-404 "Massprop" command). Moreover, recalculation of mass and volume of polyhedrons in Maxley is immediately after changes are made in the vertex locations.

On the other hand, Maxley does not teach the use of labor attributes nor specific material attributes (such as prices for sq. ft. of dry wall or sq. yd. of carpet, as taught in the Fig.9 of the specification).

Maxley also does not teach revising the material and labor attribute of a given morphed facet and any adjacent facets of said estimation polyhedron also modified and affected by said step of morphing, in order to maintain a closed volume of said estimation polyhedron.

13. Gromat teaches the automatic computation of materials costs of "three dimensional drawings of structures" by "using simple CAD techniques" (see col.6, line 63 to col.7, line 10).

However, Gromat does not teach the capability of morphing polyhedrons, recalculating the attributes after morphing, nor the use of labor attributes.

Gromat also does not teach revising the material and labor attribute of a given morphed facet and any adjacent facets of said estimation polyhedron also modified and affected by said step of morphing, in order to maintain a closed volume of said estimation polyhedron.

14. Krause teaches the calculation of labor and materials attributes based on the specification of CAD generated "blueprints" (see col.8, line 13 to col.9, line 5).

On the other hand, Krause does not teach the morphing of polyhedron structures in the blueprints, nor the revision of the labor or materials attributes as a result of the morphing step.

Krause also does not teach revising the material and labor attribute of a given morphed facet and any adjacent facets of said estimation polyhedron also modified and affected by said step of morphing, in order to maintain a closed volume of said estimation polyhedron.

15. Therefore, neither Hsu, Maxley, Gromat, nor Krause teach the limitation of morphing a selected facet of a polyhedron, in combination with the limitation of subsequently revising both material and labor attributes, in combination with the limitation of revising the material and labor attribute of a given morphed facet and any adjacent facets of said estimation polyhedron also modified and affected by said step of morphing, in order to maintain a closed volume of said estimation polyhedron. Therefore, Examiner finds these independent claims, and all their dependent claims, to be allowable over the cited prior art.

16. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (703) 306-0297. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on (703) 305-9704. Any response to this office action should be mailed to:

Director of Patents and Trademarks
Washington, DC 20231

Hand-delivered responses should be brought to the following office:

4th floor receptionist's office
Crystal Park 2
2121 Crystal Drive
Arlington, VA

Fax: (703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is: (703) 305-3900.

Ayal I. Sharon

Art Unit 2123

July 21, 2004

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER